

## K-5 Science Live Curricular Materials SY 23-24 Southeast - Laurel Bay

### What are the Living Curricular Materials? When are they used for instruction?

The living curriculum materials are an important part of the *FOSS Next Generation* Life Science units.

The Life Science units range from 8-12 weeks in length. For more information on life science, please visit the [Americas Science Website](#).

	<b>Week 1</b>	<b>Week 2</b>	<b>Week 3</b>	<b>Week 4</b>	<b>Week 5</b>	<b>Week 6</b>
<b>Kindergarten</b> (8 weeks)	Goldfish Guppies Elodea		Snails		Redworms Earthworms	Pillbugs Sowbugs
<b>First Grade</b> (10 weeks)						Pillbugs Sowbugs
<b>Second Grade</b> (12 weeks)	Mealworms		Milkweed bug eggs		Silkworm eggs	Butterfly larva
<b>Third Grade</b> (10 weeks)				Crayfish/ Hissing Roaches Elodea		
<b>Fourth Grade</b> (9 weeks)	Mealworms Pillbugs Sowbugs		Goldfish Guppies Snails Elodea Gammarus			
<b>Fifth Grade</b> (10 weeks)	Redworms				Butterfly larva	

### How do we prepare for the Living Curricular Materials?

The containers and needed materials for the living materials are found within the kit. Basins are used for aquariums and terrariums.

### How do we prepare for a safe environment when working with the Living Curricular Materials?

All teachers should review their class records for allergy concerns. Not just for animal related allergies, but those with food as well, i.e. apples, carrots, strawberries, etc.

For the classrooms with allergy concerns, the classrooms should be provided with a box of latex-free gloves so that they would have protection while handling the potential allergens, i.e. soil (all grades), vermiculite (1<sup>st</sup>), Crayfish (3<sup>rd</sup>), Shrimp Brine Eggs (4<sup>th</sup>), Gammarus (4<sup>th</sup>). This is a teachable moment to teach all the children to wash their hands after handling the materials and that they are not to be touching their faces.

It is a good idea to have students rinse their hands with water before handling the live organisms. Rinsing hands before will prevent soap and lotions from contaminating the water and harming the animals. All students should wash their hands with soap and warm water directly after handling all animals, chemicals or plants.

Wear chemical splash safety goggles when necessary. Teachers should be aware of which students wear contact lenses.

Encourage students to not touch their face, mouth, ears, eyes, nose or door handles while working with chemicals, plants, or animals.

Clean up all work surfaces after the handling of all chemicals, plants and animals.

Please be sure to place all chemicals out of reach for students when not directly in use for the lesson, i.e. dechlorinator for fish (K).

All teachers should utilize the "[Safety Data Sheets](#)", should they be needed, on FOSSweb online.

Teachers should regularly check the "Updates & Help" section of FOSSweb.

Should any additional concerns arise, please contact your building administrator or Dominique Marie Roberts.

## Quick Guide to Finding Materials and Information

	Kindergarten	First Grade	Second Grade	Third Grade	Fourth Grade	Fifth Grade
Kit Drawer #	2, 3, 5	2	7	5, 6	4, 8	2, 6
Investigation Guide Pages	Pages 48-49	Page 173-174	Pages 51-54	Pages 59-61	Pages 54-58	Pages 58-59
Safety in the Classroom and Outdoors	Pages 22-24	Pages 22-24	Pages 22-24	Pages 28-30	Pages 24-26	Pages 24-26

FOSSweb provides a great resource with Teacher Prep videos.

Please contact your district's Pk-5 Science ISS if you are not able to log on to FOSSweb.

## When will the Living Curricular Materials Arrive for SY 23-24?

The [Scope and Sequence](#) outlines that the Life Science unit should be conducted in the first third of the year.

The following dates are an *estimation* of arrival. (NOTE: This year, there will be five shipments instead of seven.)

After exact dates are confirmed with the vendor, notice will be provided to each school for each shipment.

Shipment and Shipping Week	Grade Level, Name of Curriculum Unit, Organism in Package
1 <sup>st</sup> Shipment Aug 21, 2023	<ul style="list-style-type: none"> <li>● 2nd grade mealworms</li> <li>● 4th grade mealworms, pillbugs, and sowbugs</li> <li>● 5th grade redworms</li> </ul>

2 <sup>nd</sup> Shipment Sep 5, 2023	<ul style="list-style-type: none"> <li>Kindergarten goldfish (2 per classroom), guppies (2 male &amp; 4 female per classroom), elodea</li> <li>2nd grade butterfly larva</li> <li>4th grade goldfish (2 per classroom), guppies (10 per classroom), pond snails, elodea, and gammarus</li> </ul>
3 <sup>rd</sup> Shipment Sep 18, 2023	<ul style="list-style-type: none"> <li>Kindergarten Ramshorn snails and Pond snails</li> <li>2nd grade silkworm eggs &amp; silkworm food</li> <li>5th grade butterfly larva</li> </ul>
4 <sup>th</sup> Shipment Oct 2, 2023	<ul style="list-style-type: none"> <li>Kindergarten redworms and earthworms</li> <li>Kindergarten</li> <li>1st grade pillbugs and sowbugs</li> <li>1st grade</li> <li>2nd grade milkweed bugs eggs</li> <li>3rd grade crayfish, elodea, and Madagascar hissing roaches (alternative to crayfish)</li> </ul>
5 <sup>th</sup> Shipment Oct 16, 2023	<ul style="list-style-type: none"> <li>Kindergarten pillbugs and sowbugs</li> </ul>

## What to do when the Living Curricular Materials arrive...

Once live specimens arrive, please take them out of their shipping containers as soon as possible. Please report any casualties, so that replacements can be reordered.

Classroom teachers should have all the containers and food for the live organisms in their science kits. When the boxes arrive, it is crucial that they are delivered to the classroom teacher immediately.

If assistance is needed in setting up habitats, please do not hesitate to contact Dominique Marie Roberts at [dominique.roberts@dodea.edu](mailto:dominique.roberts@dodea.edu) or 706.545.8242.

Plant and animal care information is also located on FOSSweb.

### Aquatic Snails: Pond Snail — *Nerites sp.*, *Physa, sp.* & Ramshorn Snail — *Planorbis sp.*



#### What to do when they arrive.

Immediately upon arrival, open bag and place the bag in a cup or similar upright container to prevent tipping. Rinse snails with dechlorinated or spring water prior to

transferring to aquarium/basin. Snails will feed on algae or decaying plant matter naturally found in the aquarium. Feed them a bit of flake fish food the first few days. Aquatic snails are very easy to care for. All you need is a container of aged or chemically dechlorinated (conditioned) water. The bottle of dechlorinator/water conditioner is located within the kit in Drawer 3 of the kindergarten kit and in Drawer 8 of the 4<sup>th</sup> grade kit. When you change the water, be sure to bleach or freeze the old water before pouring it out to avoid any tiny snail eggs from being released into the local water.

## Crayfish: Red Swamp Crayfish - *Procambarus clarkii*



### What to do when they arrive.

The crayfish will arrive in a cardboard box packed with damp paper or moss. Alert the school's mail clerk and/or office staff to notify you as soon as they come. Immediately upon arrival, cut open plastic bag to provide air. Keeping bag upright, float entire contents in prepared bus tray for 15 to 30 minutes to equalize water temperatures. Carefully remove crayfish from the bag, grasping each from behind to avoid the strong pincers. Aquatic plants shipped with the crayfish should be rinsed in clean dechlorinated or spring water and used as both food and "hiding" places for the crayfish. Maintain at cool room temperatures, out of direct sunlight.

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## Elodea (Anacharis) — *Elodea densa* or *Egeria najas*



### What to do when they arrive.

Open bag and rinse plants in dechlorinated or spring water. Keep the Elodea floating in bowl of dechlorinated or spring water to avoid drying out until it's ready to use. It provides food and habitat.

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## Gammarus — *Gammarus* sp.

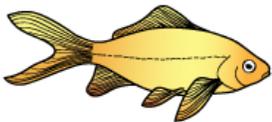


### What to do when they arrive.

Upon arrival, transfer into a larger container of dechlorinated or spring water, using a large baster or by pouring contents directly from the shipping jar. Keep container at room temperature out of direct sunlight. Gammarus are scavengers and feed on microscopic algae and protozoans normally found in pond water. If keeping for longer periods of time, introduce aquatic plants into the aquarium/basin which, as they break down, will provide food.

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## Goldfish/Platy — *Carrasius auratus*



### What to do when they arrive.

Float the unopened bag in the aquarium of dechlorinated or spring water for about 15 minutes to equalize the temperature. When temperatures are equal, pour contents of bag through a dip net into another container and transfer fish from net to the aquarium/basin.

Discard shipping water. **DO NOT USE CHLORINATED TAP WATER!** The bottle of dechlorinator/water conditioner is located within the kit in Drawer 3 of the kindergarten kit and in Drawer 8 of the 4<sup>th</sup> grade kit.

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## Guppies/Mosquito Fish — *Poecilia reticulata*/*Gambusia Affinis*



### What to do when they arrive.

Float the unopened bag in aquarium of dechlorinated or spring water for about 15 minutes to equalize the temperature. When temperatures are equal, pour contents of bag through a dip net into another container and transfer fish from net to the aquarium/basin. Discard shipping water. **DO**

**NOT USE CHLORINATED TAP WATER!** The bottle of dechlorinator/water conditioner is located within the kit in Drawer 3 of the kindergarten kit and in Drawer 8 of the 4<sup>th</sup> grade kit.

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## Isopods: Sow Bug — *Oniscus ascellus*, *Porcellio* sp. & Pill Bug — *Armadillidium vulgare*

### What to do when they arrive.



The shipping container contains damp paper to provide moisture. Upon arrival, mist paper slightly. Food should be removed if it shows any sign of mold and replaced with sliced carrot, potato, or apple. Pill bugs and sow bugs can be kept in the shipping container for a few days until ready to use in class. Moisten the paper towels as necessary. If you are keeping them for a longer period of time, place them in a terrarium with rich, moist soil. Place moist paper towels in the container to provide humidity. Continue to add vegetables, replacing them as necessary to control mold. Keep container at room temperature in low light.

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### **Mealworms (larva) /Darkling Beetles (adult) – *Tenebrio molitor***



#### **What to do when they arrive.**

Mealworm beetles are shipped in a container with a “breathing” cap to provide air. They need no special care but should be used as soon as possible, as they have a rather short life span. Keep beetles at normal room temperatures in low light. Store in a cool place at 45 to 65°F out of direct sunlight. At warmer room temperatures, larvae will soon pupate. Cover loosely with a paper towel to provide crawling space. Add slices of potato or carrot for moisture and replace as necessary or if it becomes moldy.

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### **Milkweed Bugs Eggs – *Oncopeltus fasciatus***



#### **What to do when they arrive.**

Eggs are shipped on a wad of floss. If you are unable to begin the investigation when the eggs arrive, they may be kept in the container at cool room temperatures or refrigerated for short periods; otherwise they will hatch within one week. If the eggs have hatched upon arrival, add a few sunflower seeds and hatched nymphs to the vials for distribution to the students.

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### **Painted Lady Butterfly Larva— *Vanessa cardui***



#### **What to do when they arrive.**

Painted lady butterflies arrive in a plastic container with a centimeter or two of green goop that looks like guacamole. You might notice that the food has gelled at a slant in the jar. This is designed to maximize the available surface area for the larvae. The ventilated lid holds a piece of filter paper over the top of the container. Keep the lid and paper on the container at all times. The painted ladies will spend all of their larval days, perhaps 7-10 days or a little more, in the container eating the food layer, molting, and growing to a length of 4 cm (1-1/2") or a little more. They require no special attention other than to keep them in a well-lighted area, but out of direct sun and safe from temperature extremes.

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### **Redworms — *Eisenia foetida*, *Alloloborpha callignosa***

### **Earthworms/Night Crawlers – *Lumbricus terrestris***



#### **What to do when the redworms arrive.**

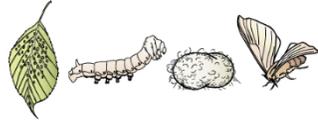
Redworms can be kept in shipping container for short periods. Upon arrival, mist with water to moisten, but do not make soil wet. Worms should be kept at room temperature in diffused light, feeding crushed dead leaves or cornmeal sprinkled over the surface of the soil. Add rich soil (preferably humus) as needed, and remove any mold as it appears. Bay, eucalyptus, and magnolia leaves, and needles from pine, fir, and cedar trees should not use as food, they will kill your worms. A good temperature for redworms is 15° to 26°C.

#### **What to do when the earthworms arrive.**

Keep the night crawlers in the container they came in, or a 1/2 L container about three-quarters full of damp soil. Poke holes in the lid for ventilation. Store the worms in the refrigerator or a cool place for a few days before they are introduced to students. Night crawlers prefer cooler temperatures and deep burrows so will not survive well in the terrarium with redworms over long periods of time. You can maintain night crawlers in a container with some moist, loose soil and food. Unlike red worms, night crawlers are hard to keep alive in the classroom and will soon die and become part of the soil.

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### **Silkworm Eggs – Bombyx mori**



#### **What to do when they arrive.**

Purchased silkworm eggs usually arrive loose in a vial. Working on a large piece of white paper, use the little paintbrush to divide the eggs into eight piles, and put one pile into each of eight vials. Cap the vials. Keep them in a warm place out of direct sunlight until you are ready to introduce them to students.

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### **Oriental Roaches/Madagascar Hissing Roaches- *Gromphadorhina portentosa***



#### **What to do when they arrive.**

Release roaches into a prepared container with plenty of ventilation but with a tight lid, as they are quite strong and can otherwise escape.

**Caring for cockroaches.** Hissing roaches need food, water, warmth, and cover. Use a terrarium as the habitat; its size will depend on the number of roaches you will be housing.

- Use one of the plastic 6-liter basins and lid provided in the kit. Hissing roaches are excellent climbers and can easily scale the side of a terrarium. One way to prevent this is to apply a band of petroleum jelly 4 cm (1–1/2") wide all the way around the inside of the terrarium near the top. Roaches will not cross the sticky barrier.
  - Cover the bottom of the terrarium with paper towels, sand, soil, or wood shavings. Put in lots of stuff for the roaches to crawl into and under for cover. Slightly flattened paper-towel tubes, paper egg cartons, chunks of tree bark, and the like will work. Roaches are thigmotaxic, meaning they like to have physical contact with some structure for security. Hissing cockroaches are more likely to hiss when there are objects in the habitat container.
  - Place food in a shallow dish such as a petri dish. Small bits of vegetables, bread, dry dog food, crackers, and fruit are good. Don't worry if the fruit starts to mold; the roaches seem to like it that way.
  - Place a cotton ball or piece of sponge in a small dish (like a small plastic cup, cut so it is a centimeter tall). Keep a little water in the cup at all times.
  - Place the terrarium in a warm location. If the temperature is likely to drop below 20°C (68°F), keep a low-wattage lamp on one end of the terrarium.
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### **What to do with the Living Curricular Materials at the end of instruction...**

It is **very** important that you **DO NOT** release any living materials into the local environment.

Most of the organisms will not have a long life span and will easily be able to enjoy their time in the classroom helping our students learn about science.

If you need assistance with what to do with live materials at the end of instruction, please contact your school's SSA or district's PK-5 Science ISS for local guidance.